TRIPLETT

INSTRUCTION MANUAL

MODEL 630-A

VOLT-OHM-MIL-AMMETER

Model 630-A

Name .....

Address .....

FOREWORD

With your purchase of a Model 630-A Volt-Ohm-Mil-Ammeter, you have made a worthwhile investment, not only in a fine instrument, but backed up by a company which has been making instruments for nearly a half century. The Triplett Company stands behind your 630-A and will give all possible assistance in its use and maintenance.

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FAMILIARIZATION

The Model 630-A Volt-Ohm-Mil-Ammeter is a rugged long scale multi-range instrument in a compact portable case.

Unpack your 630-A and fill out the registration card enclosed. Send this to Triplett immediately so you can be protected under the guarantee. Remove the test leads from the small envelope and notice the two alligator clips enclosed. The clips slide over the ends of the test prods and make very handy connectors.

Plug the small ends of the test leads into the panel jacks marked COM and V-Ω-A. The jacks and plugs are especially made for trouble-free, low resistance connections.

Scales

Notice there are five scales on the meter. The top red scale is used when measuring ohms. This scale is marked from 0 to 1K (at left side). With the switch knob turned to Ω×1, the ohms scale is read just as it is marked. With the switch knob turned to Ω×10, the numbers on ohms scale must all be multiplied by 10. Likewise Ω×1000 and Ω×100,000 mean to multiply by 1000 and 100,000 respectively.

The second scale down (black) is used to read all DC voltages. The third scale (red) is used for all AC voltages except the 3 volt range—the latter is read on the bottom red scale (marked 3 at full scale).

The lowest scale is used for all decibel measurements. Notice the chart near the lower right hand corner of the dial. This is used in conjunction with the DB scale as explained on page 14.

Panel

Just below the meter is a small bakelite screw. This is rotated with a small screw driver to adjust the meter pointer to exactly zero. This need only be adjusted occasionally but for best accuracy the pointer should always be on zero before making a measurement.

The large knob in the lower center of the panel is used

to select all ranges. The markings are self explanatory.

Left of the knob is a recessed Ω ADJ control used when making resistance measurements.

Observe the jacks and note carefully the marking for each. You will use the COM and V-Ω-A jacks for most measurements.

Accuracy

Your 630-A is accurate to within 1½% of full scale reading on all DC ranges except the 6000 volt range which is within 4%. AC ranges, except 6000 V, are accurate to within 3% when used at 77° F on 60 cycle sine wave voltages. The 6000 ACV range is accurate to within 4%. The resistance ranges are accurate to within 1½% of the scale length. Precision non-aging resistors insure lasting accuracy. All units are calibrated at 77° F. AC ranges are calibrated on a 60 cycle sine wave. In choosing ranges always endeavor to have the readings fall in the upper (or right hand) half of the scale for greatest accuracy. Also for greatest accuracy, the instrument should be used in the horizontal position.

Ranges

The following ranges are self contained in your 630-A:

DC Volts	0-3-12-60-300-1200-6000 at 20,000 Ohms per Volt
AC Volts	0-3-12-60-300-1200-6000 at 5,000 Ohms per Volt
DC Microamperes	0-60 at 250 Mv.
DC Milliamperes	0-1.2-12-120 at 250 Mv.
DC Amperes	0-12 at 250 Mv.
Ohms	0-1000-10,000.....(4.4-44 at center scale)
Megohms	0-1-100.....(4400-440,000 at center scale)
Output Volts	0-3-12-60-300-1200 AC at 5,000 Ohms per Volt
Decibels	—30 to +4, 16, 30, 44, 56, 70 on 500 Ohm line

Your 630-A is well constructed but like any instrument should be handled carefully. You will also want to keep the panel clean as cleanliness and carefulness go hand in hand.

OPERATION

Measuring DC Volts

Rotate the selector switch to the appropriate range for DC volts. Always start with the highest range if in doubt as to the approximate voltage.

In choosing ranges, endeavor to have the readings fall in the upper, or right hand, half of the scale for greatest accuracy.

Plug the black test lead into the COM jack and the red lead into the V-Ω-A jack as shown in Figure 1.

CAUTION: When measuring up to 6000 volts set the selector switch on the 6000/1200 range, plug the red lead into the jack marked 6000 DCV, and leave the black lead in COM.

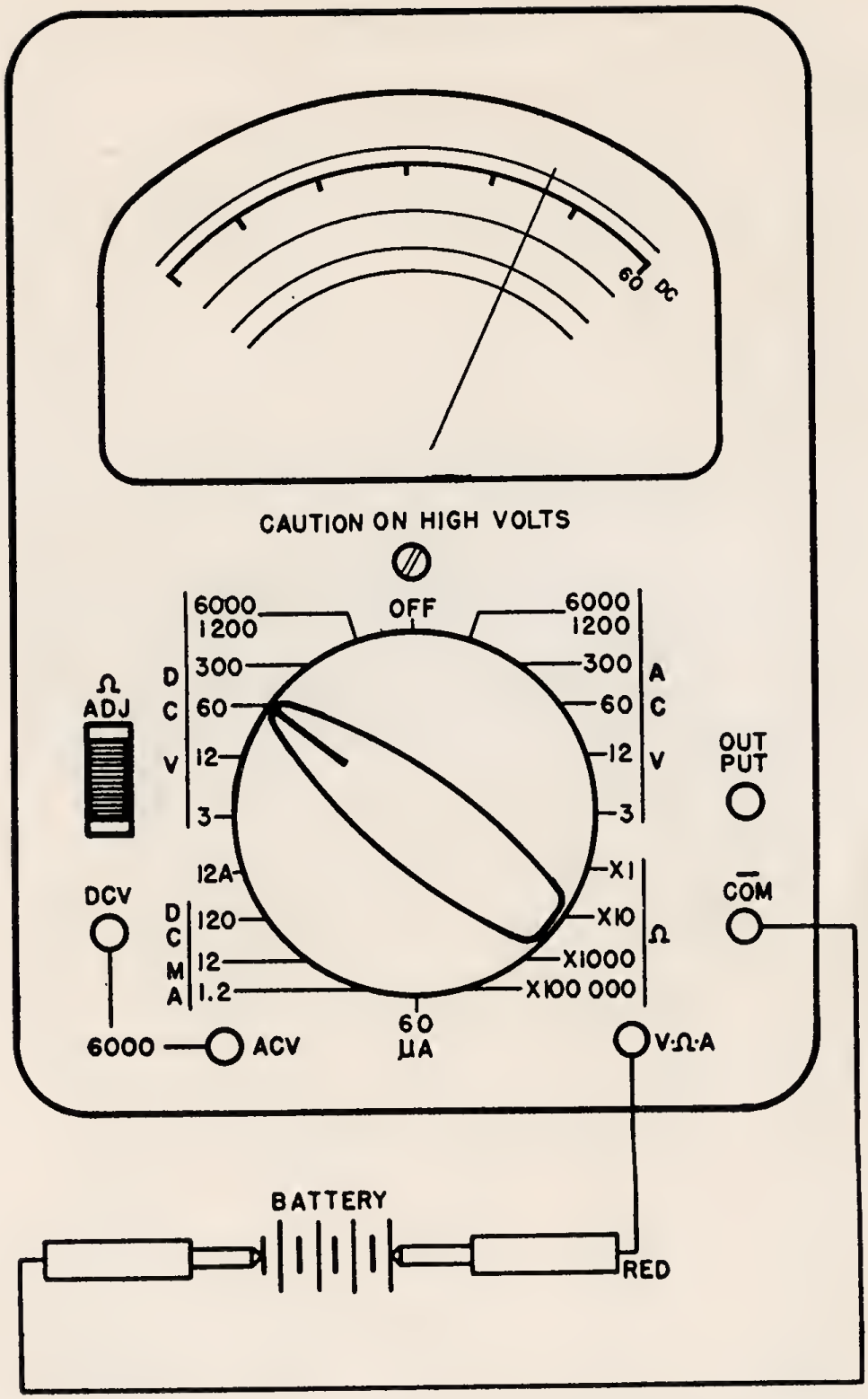
Connect the test prods ACROSS the voltage source. The red lead is positive. Where polarity is difficult to determine, the meter may read backwards. No damage will be done if this occurs. Simply reverse the leads.

Read all DC voltages on the top black meter scale. Notice that the scales are not all marked exactly the same as the range indicated by the knob position. Thus 0-3 volts is read on the 0-300 scale by omitting two zeros (i.e. ÷ by 100) on all readings, the 0-1200 range is read on the 0-12 scale by adding two zeros, and the 0-6000 range is read on the 0-60 scale by adding two zeros.

The high sensitivity of 20,000 ohms per volt will allow you to take measurements in low current circuits such as grid and discriminator circuits.

CAUTION: For maximum safety do not handle tester or leads when connected to high voltages. Make certain that no condensers are charged to a high voltage.

For handy operation chart see pages 18 and 19.



NOTE: To measure above 1200 volts, red lead must be plugged into the 6000 DCV jack and selector switch set on the 6000/1200 DCV range.

Figure 1—Measuring DC Volts

OPERATION

Measuring AC Volts

Rotate the Selector switch to the appropriate range for AC volts. Always start with the highest range if in doubt as to the approximate voltage.

In choosing ranges, endeavor to have the readings fall in the upper, or right hand, half of the scale for greatest accuracy.

Plug the black test lead into the COM jack and the red lead in the V-Ω-A jack as shown in Figure 2.

CAUTION: When measuring up to 6000 volts set the selector switch on the 6000/1200 range, plug the red lead into the jack marked 6000 ACV, and leave the black lead in COM.

Connect the test prods ACROSS the voltage source. As there is no polarity on AC, the red and black leads may be interchanged without causing the meter to read backwards.

Use the two lower red scales for AC volt readings. Note that the bottom scale is ONLY to be used for one range, namely the 0-3.

When using the 0-1200 AC volt range, read on the 0-12 scale by adding two zeros. When on the 6000 volt range use the 0-60 scale by adding two zeros.

No correction for frequencies is necessary from 25 c. p. s. to 1000 c. p. s.

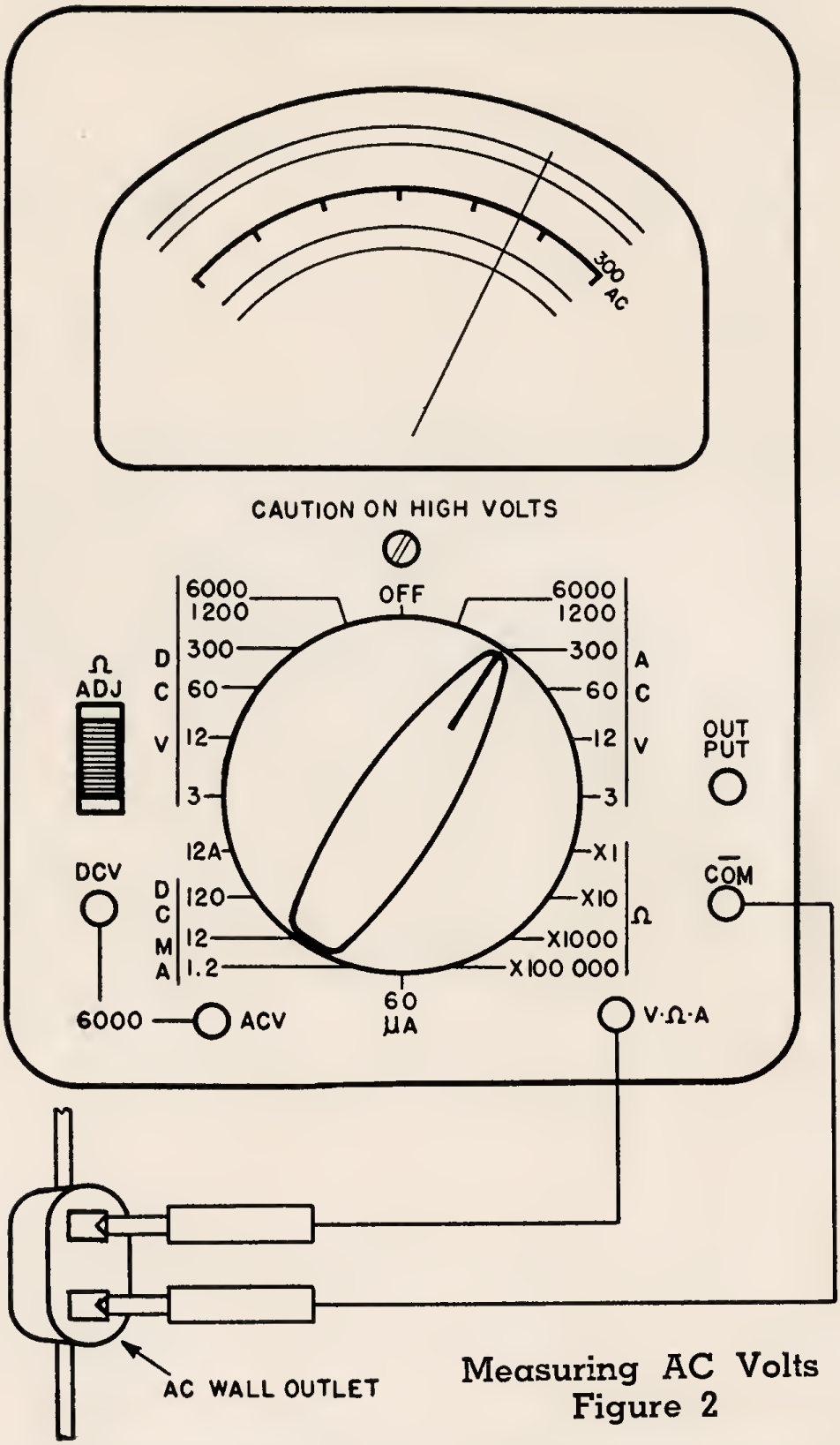
Correction data for frequencies above 1000 c. p. s. is given below:

(—) means subtract divisions from the reading.

Freq.	Correction in Divisions			
c. p. s.	3V	12V	60V	300V
2,000	—1	—1	—1	—1
5,000	—2	—2	—2	—2
7,500	—3	—3	—3	—1.5
10,000	—5	—5	—3.5	—1
15,000	—7	—7	—5	+2
20,000	—9	—10	—7	+7

CAUTION: For maximum safety do not handle tester or leads when connected to high voltages.

For handy operation chart see pages 18 and 19.



Measuring AC Volts
Figure 2

NOTE: To measure above 1200 volts, red lead must be plugged into the 6000 ACV jack and the selector switch set on the 6000/1200 ACV range.

OPERATION

Measuring DC Resistance

Rotate the selector switch to the appropriate range for ohms determined from the following chart:

To Read	Set Switch to
0-1000 ohms	Ω×1
0-10,000	Ω×10
0-1 Meg.	Ω×1000
0-100 Meg.	Ω×100,000

Plug the black test lead into the COM jack and the red lead into the V-Ω-A jack as shown in Figure 3.

Short the test prods together and adjust the Ω ADJ knob until the meter pointer reads 0 on the top red (Ω) scale. (The 0 for the ohms scale is at the extreme right side of the scale.)

Connect the test prods across the resistor as shown. If the resistor is wired in a circuit, disconnect one end of the resistor before taking the reading.

Each time an ohm range is changed, it is well to check the 0 setting as outlined in paragraph 3 above.

The basic scale 0-1K (0-1000) is used for reading on all ohm ranges. Simply multiply the scale numbers by 1, 10, 1000, or 100,000 as indicated by the selector switch setting.

It should be kept in mind that in the measurement of resistance a current is passed through the unknown resistor. Generally this current is so small as to be negligible. However on the 0-1000 range fairly high current is employed. Thus when measuring at half scale (4.4 ohms) approximately 170 Ma. is passing through the unknown resistor. For most applications, no damage will be done to the device under test with this amount of current.

Since the scale of an ohmmeter is non-linear, the accuracy of the reading cannot be expressed as a per cent of full scale. Ohmmeter accuracy is generally referred to a linear scale such as the DC volt scale. Thus ±1½ ohmmeter accuracy means an allowable ±.9 divisions on the DC scale. For example 2 ohms could read from about 1.85 to 2.2 ohms and be within tolerance.

For handy operation chart see pages 18 and 19.

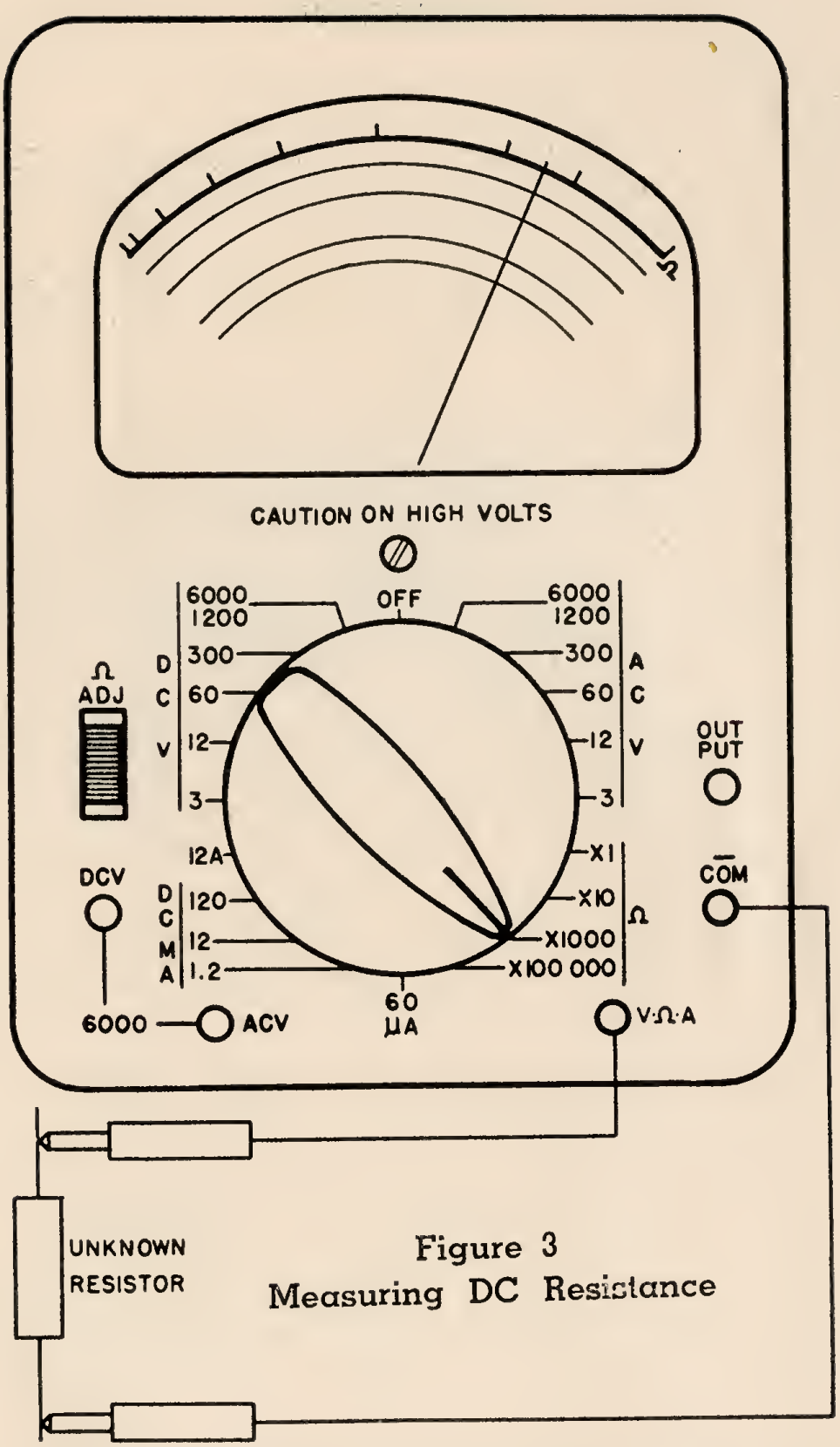


Figure 3
Measuring DC Resistance

NOTE: Do not touch any metal parts of the circuit when using the high ohm ranges. It is not dangerous but your body resistance can cause serious error.

Measuring DC Current

Rotate the selector switch to the appropriate range for DC current. Always start with the highest range if in doubt as to the approximate current.

In choosing ranges, endeavor to have the readings fall in the upper, or right hand, half of the scale for greatest accuracy.

Plug the black test lead into the COM jack and the red lead into the V-Ω-A jack as shown in Figure 4.

Connect the test prods in SERIES with the circuit to be measured. Do not test directly across any potential circuits as this may burn out the instrument and shunt. The red lead is positive. Where polarity is difficult to determine, the meter may read backwards. No damage will be done if this occurs. Simply reverse the leads.

Read all current ranges (including microamperes, milliamperes, and amperes) on the upper black scale. When on the 1.2 Ma. range use the 0-12 scale and divide by 10. On the 120 Ma. range again use the 0-12 scale by multiplying by 10.

CAUTION: Turn off the power before connecting the meter to the circuit. Do not handle tester or leads in high voltage circuits.

In using the 60 mircoampere range, the meter may read different than calculations would indicate. This is sometimes caused in low current circuits by a slight leakage of voltage due to moisture. Other times a slight potential is generated by soldering or joining of dissimilar metals. Even the proximity of fumes or liquid acids and alkalies may react with the metal parts of the circuit and generate slight currents. The fingers should not be permitted to touch the metal parts of the prods or circuit as body resistance can also upset some circuits.

For handy operation chart see pages 18 and 19.

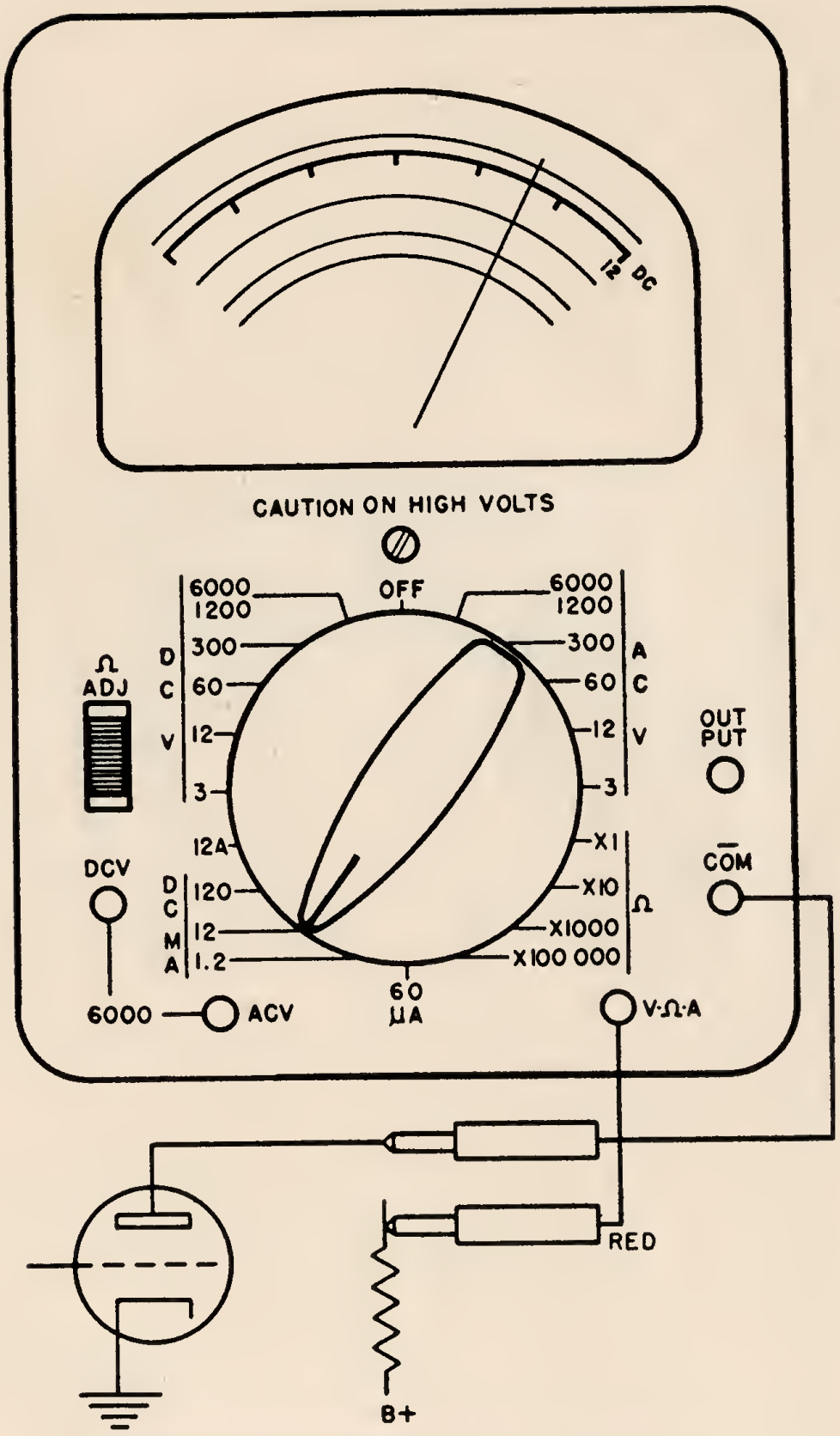


Figure 4—Measuring DC Current

Measuring Output Volts (DB)

Output is generally measured in units called the decibel, a terminology used to indicate power levels in amplifiers or telephone work. The DB scale on your meter is based on the voltage developed across a 500 ohm line when .006 watts is dissipated in the line.

Do not confuse the DB with the VU (Volume Unit). The VU is based on .001 watt dissipated in a 600 ohm line and is measured with a meter having special ballistic characteristics.

Rotate the selector switch to the appropriate AC volt range. Refer to the small chart on the meter dial for the range to use. Always start with the highest range if in doubt as to the approximate number of decibels.

Normally it is recommended to measure output by plugging the black test lead into the COM jack and the red lead in the OUTPUT jack as shown in Figure 5.

Oftentimes a DC voltage is present in the circuit where output is to be measured. The extra jack marked OUTPUT with a .1 mfd condenser in series is provided to block the DC.

The condenser impedance is generally disregarded in most measurements. Where no DC is present, this output voltage can be read accurately by using the 630 as a regular AC voltmeter (i. e. by plugging the red lead into the V-Ω-A jack instead of OUTPUT).

Connect the test prods across the plate circuit or speaker voice coil.

Read all DB ranges on the bottom black scale using the small chart on the meter dial. For example, when the selector switch is set on the 3 AC volt range, the DB scale is direct reading. When on the 12 AC volt range, add 12 to each number on the DB scale, thus with the meter reading —2, the actual DB reading is +10 DB.

If line impedance is not 500 ohms (as in speaker voice coils) the readings will be only relative—not actual DB.

For handy reference chart see pages 18 and 19.

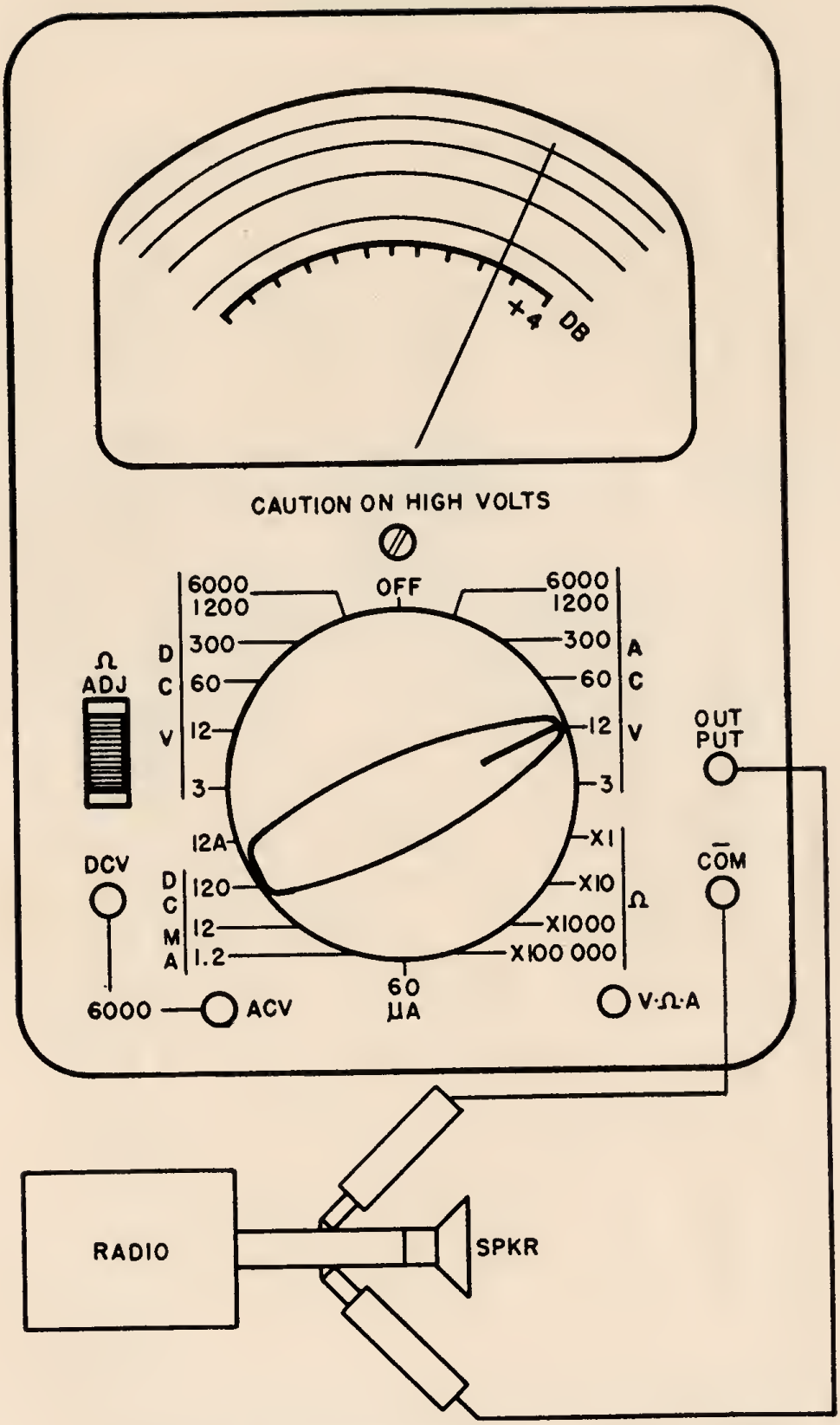


Figure 5—Measuring Output Volts (DB)

Measuring Capacity

Your 630-A can be used to measure capacity by the arrangement shown in Figure 6. It is set up as an AC voltmeter. See page 8.

Use the following chart to determine the AC voltage range to use. ALWAYS start with the selector switch on the 300 volt range since if the condenser is shorted, serious damage may result to the meter when on a low range.

To Measure MFD	Set Selector Switch to	Deflection in AC Volts
.002	3 ACV	.45
.004		.83
.006		1.25
.008		1.65
.010		2.10
.020	12 ACV	4.3
.04		7.7
.05		9.7
.08	60 ACV	14.5
.10		17.5
.2		30.0
.4		45.0
.6		57.0
.8	300 ACV	65.0
1.0		75.0
2.0		85.0
5.0		95.0
10.0		100.0

CAUTION: Do not attempt to use this test on electrolytic condensers.

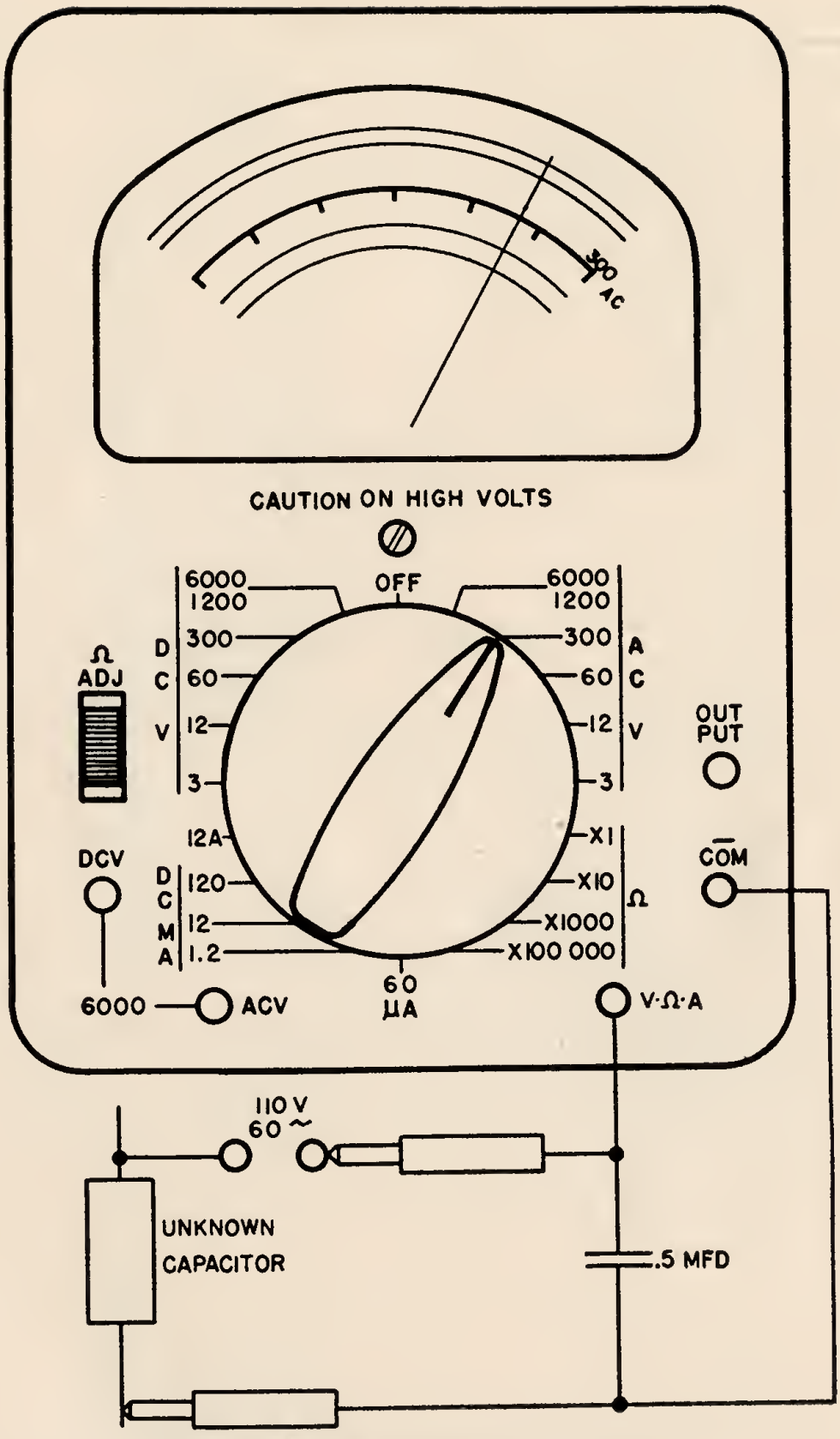


Figure 6—Measuring Capacity

OPERATION CHART

To Measure	Set Selector Switch To	Plug Red* Test Lead In Jack Marked	Read On	Each Scale Div. Equals
DC VOLTS			BLACK SCALE	
0-3	3 DCV	V-Ω-A	0-300 DC÷100	0.05 Volt
0-12	12 DCV	V-Ω-A	0-12 DC×1	0.2 Volt
0-60	60 DCV	V-Ω-A	0-60 DC×1	1.0 Volt
0-300	300 DCV	V-Ω-A	0-300 DC×1	5.0 Volt
0-1200	1200/6000 DCV	V-Ω-A	0-12 DC×100	20.0 Volts
0-6000	1200/6000 DCV	6000 DCV	0-60 DC×100	100.0 Volts
AC VOLTS			RED SCALE	
0-3	3 ACV	V-Ω-A	0-3V AC×1	0.05 Volt
0-12	12 ACV	V-Ω-A	0-12 AC×1	0.2 Volt
0-60	60 ACV	V-Ω-A	0-60 AC×1	1.0 Volt
0-300	300 ACV	V-Ω-A	0-300 AC×1	5.0 Volt
0-1200	1200/6000 ACV	V-Ω-A	0-12 AC×100	20.0 Volts
0-6000	1200/6000 ACV	6000 ACV	0-60 AC×100	100.0 Volts
DC CURRENT			BLACK SCALE	
0-60 Ua DC	60 μa	V-Ω-A	0-60 DC×1	1.0 μa
0-1.2 Ma DC	1.2 DCMA	V-Ω-A	0-12 DC÷10	0.02 Ma
0-12 Ma DC	12 DCMA	V-Ω-A	0-12 DC×1	0.2 Ma
0-120 Ma DC	120 DCMA	V-Ω-A	0-12 DC×10	2.0 Ma
0-12 AMPS DC	12 AMP	V-Ω-A	0-12 DC×1	0.2 Amp
OHMS			Each Scale Div. Equals (in ohms)	
0-1000	Ω×1	V-Ω-A	RED SCALE | 0-1 | 1-2 | 2-5 | 5-10 | 10-20 | 20-50 | 50-200	
0-10,000	Ω×10	V-Ω-A	Ω×1 | .2 | .2 | .5 | 1 | 2 | 10 | 50	
0-1 Meg	Ω×1000	V-Ω-A	Ω×10 | 2 | 2 | 5 | 10 | 20 | 100 | 500	
0-100 Meg	Ω×100,000	V-Ω-A	Ω×1,000 | 200 | 200 | 500 | 1K | 2K | 10K | 50K	
			Ω×100,000 | 20K | 20K | 50K | 100K | 200K | 1 Meg. | 5 Meg.	
DECIBELS			BLACK SCALE	
—30 to +4	3 ACV	Output	DB plus 0	
—18 to +16	12 ACV	Output	DB plus 12	
— 4 to +30	60 ACV	Output	DB plus 26	
+10 to +44	300 ACV	Output	DB plus 40	
+22 to +56	1200/6000 ACV	Output	DB plus 52	
+36 to +70	1200/6000 ACV	6000 ACV	DB plus 66	

*** Black test lead plugged in "COM" jack for all measurements**

Measuring Kilovolts

For measuring the high voltage employed in television receivers and in other applications, an external probe is available. See Figure 7. Probes are made in three ranges, 0-12,000, 0-30,000, and 0-60,000 volts. Common usage is on DC but probes for AC are also available in the lower ranges.

To use, set the 630-A selector switch to 3 volts (AC if an AC probe is used, and DC if DC probe is used.) Plug the probe lead into the V-Ω-A jack on the panel and the black test lead into the COM jack.

Extremely high voltages are present in television sets. Use EXTREME CAUTION in measuring these and other sources of high voltage.

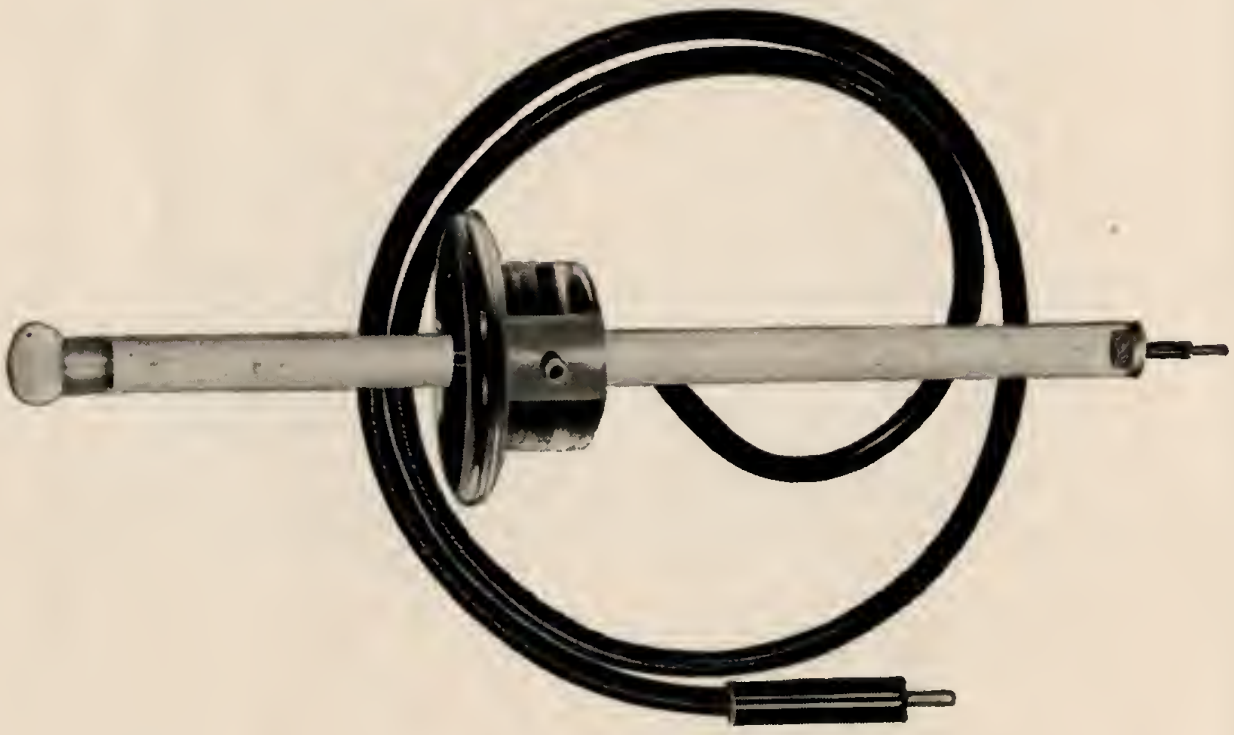


Figure 7

Measuring High DC Current

External plug-in shunts are available to extend the DC current ranges of your 630-A from the self-contained 0-12 amps to 0-30 amps. External portable shunts up to 120 amperes are also available. (See paragraph on accessories.)

Set the 630-A selector switch to the 12 Ma. position and plug the desired external shunt into the COM and V-Ω-A jacks. Connect the line to be measured to the binding posts on top of the shunts. The external portable shunts are too large to plug into the panel and must be connected to the panel jacks by the leads furnished with the shunts.

Accessories

The following accessories for your 630-A are available from your distributor:

Item	Part No.
DC Hi-Voltage probe 0-12 Kv	T-79-68
AC Hi-Voltage probe 0-12 Kv	T-79-69
DC Hi-Voltage probe 0-30 Kv	T-79-70
AC Hi-Voltage probe 0-30 Kv	T-79-71
DC Hi-Voltage probe 0-60 Kv	T-79-93
Leather carrying case	T-10-823
Plug-in external shunt 0-1.2 DC Amp.	T-91-317
Plug-in external shunt 0-30 DC Amp.	T-91-247
Portable external shunt 0-60 DC Amp.	T-91-248
Portable external shunt 0-120 DC Amp.	T-91-255

Special or separate instruments or testers can be obtained from the Triplett Company which manufactures a complete line of electrical measuring and radio test instruments.

ADDITIONAL APPLICATIONS

In The Home

When your refrigerator motor fails to "kick out" the starting winding, use the 630-A to measure the AC line voltage. If below about 100 volts notify your power company.

If your electric stove does not seem to heat quickly enough, measure the voltage input to the stove with all burners turned on and again with all burners turned off. If the difference between these two voltages is 10 or 15 volts, the power cable to the stove has defective connections or is not of large enough current carrying capacity.

Blown fuses sometimes do not visibly indicate they are burned out. With your 630-A, measure the voltage ahead and after the fuse. Voltage ahead of the fuse but no voltage following indicates a blown, defective, or loose fuse. Sometimes it is easier to remove the fuse and measure its resistance. This should be substantially zero.

Your 630-A is handy for locating trouble in desk and floor lamps. Pull the plug from the wall socket and check for a faulty cord, plug, switch, socket, or bulb by measuring resistance on the $\Omega \times 1$ range. 100 watt 120 volt bulbs should read 10 to 20 ohms. 50 watt 120 volt bulbs should read 20 to 40 ohms.

For the Radio Man

In addition to all common voltage, current, and resistance measurements used in servicing radios, the high sensitivity of your 630-A is well adapted to measuring AFC, AVC, bias, and FM discriminator voltages.

Measurements of the high voltage up to 27,000 volts used in some television receivers for the picture tube can be effected with the special high voltage probe shown on page 21.

Considerable trouble is had with leakage in automobile radio antennas (due to moisture). Your 630-A with the high ohm range 0-100 meg. is ideal to check this leakage. Disconnect the antenna from the receiver before making this check.

In The Industrial Plant

Your 630-A will be a big help in checking voltage drop caused by adding that extra machine on the already overloaded line. Correcting this will often save time later when a rush comes and the line "just happens" to burn up.

Measure the voltage at the machine first with the machine turned off and again with the machine in operation. If the voltage is proper with the machine off but low with the machine in operation, the circuit wiring or transformers have too small a capacity. If the voltage is low even with the machine off, the circuit is probably already overloaded and the machine should be wired into another circuit.

Equipment using automatic electric controls can be checked with the 630-A. Faulty relay or control action is often caused by low voltage applied to the relay or control. This low voltage in turn, may be caused by burned or dirty contacts on the proceeding control device. Use the $\Omega \times 1$ range to check for high or unstable contact resistance.

When a phone on your dial telephone system fails, measure the line current and the voltage to the particular relay in question. If the voltage is proper, measure the contact resistance of the relay contacts using the $\Omega \times 1$ scale on your 630-A. If this resistance is over a fraction of an ohm or if the resistance seems to waver, clean and adjust the relay contacts.

In The Garage

Fuses in the automobiles have a tendency to look perfectly good and yet not function due to corrosion under the metal end cap. Measure voltage ahead and behind the fuse to determine a defective unit. Or remove the fuse and measure its resistance. Anything over a fraction of an ohm is too high.

Checking automobile wiring, light switches, heaters, radios, etc., can be speeded up by simple use of your 630-A.

In The Laboratory

Your 630-A is built with all precision, non-aging resistors. The specially designed switch and special banana type plugs insure lasting accuracy. The meter with specially finished and selected pivots and jewels and a well designed stable magnet further makes the 630-A a must for the laboratory.

Special Applications

The unusually high range ohmmeter in your 630-A permits some indication of condenser leakage resistance. Measure as a resistor, see page 10, using the highest range. A good paper or mica condenser under 1 mfd. will indicate at the 100 Meg mark or above. If a steady reading (taken after the initial surge required to charge the condenser) of less than 100 megohms is obtained, the condenser probably has defective insulation. Good paper condensers over 1 mfd. may read somewhat less than 100 megohms. Electrolytic condensers should read above .1 megohm. In checking electrolytic condensers, the black test lead ("com" jack) should be connected to the positive terminal of the condenser.

Checks of insulation resistance for motors, generators, telephone cables, power cables, etc., can be made on the high ohmmeter range of your 630-A. The actual value of resistance may vary from a few megohms to over 100 meg, depending on weather conditions and quality of insulation. The best method, therefore, is to make periodic checks on important cables or equipment and observe the trend in readings. As the readings tend to be lower and lower, it is time to start drying out the equipment or determine the cause of deterioration. Dirt, mice, or foreign matter can sometimes cause excessive leakage.

MAINTENANCE

Battery Replacement

Two batteries are used for the ohmmeter circuits, a 1.5 volt Eveready No. 950 or equivalent and a 30 volt Eveready No. 413 or equivalent.

When the meter pointer can no longer be adjusted to zero (see page 10) ohms on the Ω×1, Ω×10, or Ω×1000 ranges, replace the 1.5 volt battery.

When the meter pointer can no longer be adjusted to zero ohms on the Ω×100,000 range, replace the 30 volt battery.

To replace batteries, remove the four screws in the bottom of the case and lift panel from the case. Simply lift the top spring contact above the battery, remove the old, and replace with a new battery being careful to observe polarity.

Care

A little precaution in handling and caring for your 630-A can pay big dividends in satisfaction. Treat your tester like you would a fine watch.

Avoid placing your tester on a bench where machine tools are used or severe vibration is encountered.

Do not place your 630-A near the edge of a shelf or bench where it can easily be knocked off.

When possible keep your 630-A in a place of moderate temperatures. Avoid places with extreme temperatures or severe temperature changes.

In use, don't take chances on overloading the meter. If in doubt as to the approximate reading always start with the highest range.

Get in the habit of double checking the position of the switch before making a measurement. The meter can be burned out by applying voltage when the switch is set on the current or ohms scale.

Turn the selector switch to OFF when the unit is to be carried. The meter is highly damped in this position to prevent wild swinging of the pointer.

CIRCUIT DIAGRAM

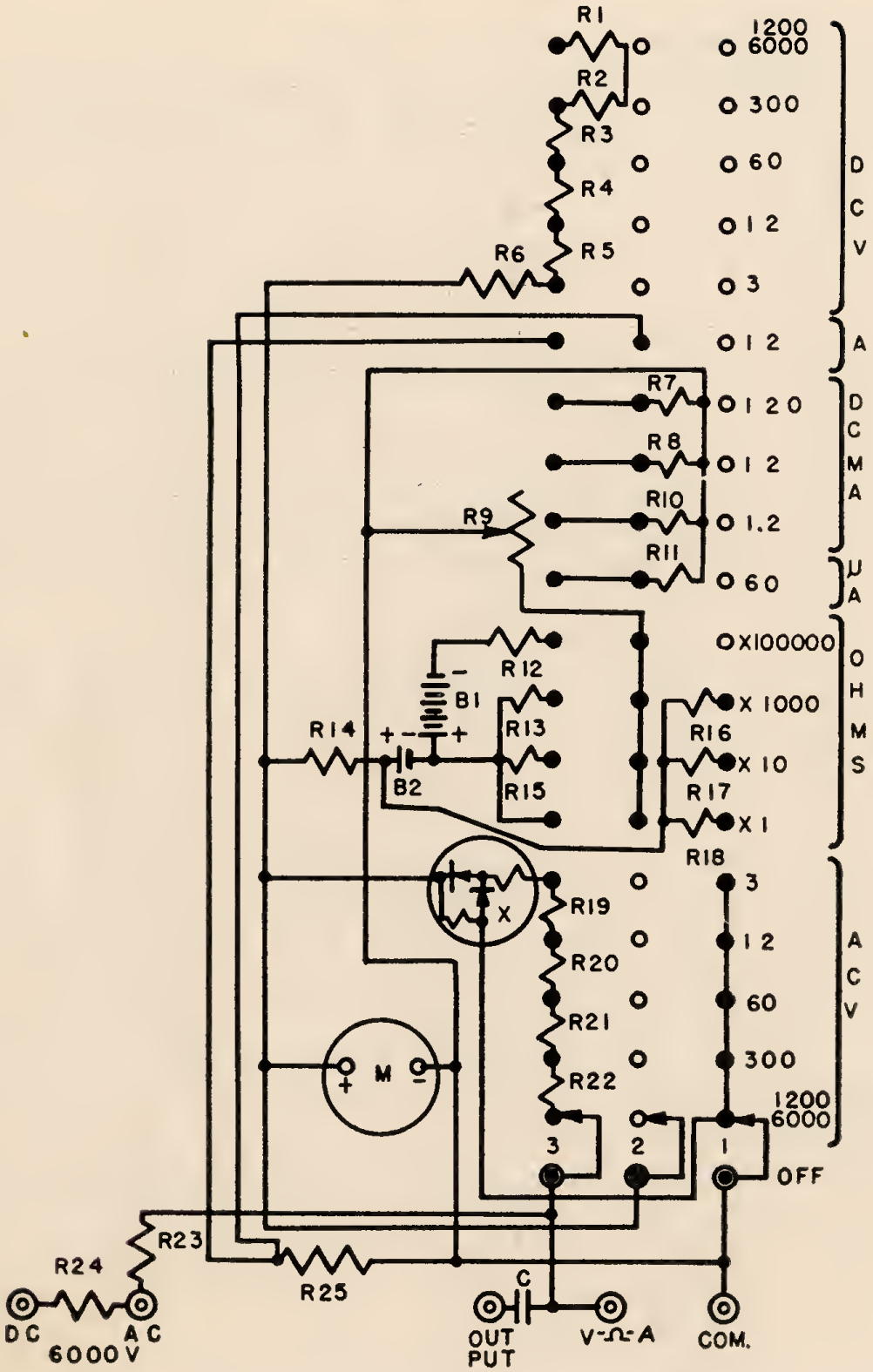


Figure 8—Circuit Diagram

REPLACEABLE PARTS 630-A

Ref. No.		DESCRIPTION	Triplett Part No.
B1	Battery	30V Eveready 413 Burgess U 20 E or Equivalent	T-37-19
B2	Battery	1.5V Eveready 950 or Equivalent	T-2426-1
C	Capacitor	.1 Mfd. 400 DCWV	T-43-69
M	Instrument	50 μa, 250 Mv with panel	T-52-532
R1, R2	Resistor	9 Megohm, ±½% Carbofilm ½W	T-15-1541
R 3	Resistor	4.8 Megohm, ±½% Carbofilm ½W	T-15-1542
R4	Resistor	960K Ohm, ±½% Carbofilm ½W	T-15-1543
R5	Resistor	180K Ohm, ±½% Carbofilm ½W	T-15-1544
R6	Resistor	55K Ohm, ±½% Carbofilm ½W	T-15 1545
R7	Resistor	2.09 Ohm, Wirewound	T-15-1558
R8	Resistor	20.9 Ohm. Wirewound	T-15-1561
R9	Resistor	20K Ohm Variable	T-16-31
R10	Resistor	217.4 Ohm Wirewound	T-15-1563
R11	Resistor	25K Ohm, ±½% Carbofilm ½W	T-15-1546
R12	Resistor	415K Ohm, ±½% Carbofilm ½W	T-15-1547
R13	Resistor	380 Ohm, ±½% Carbofilm ½W	T-15-1548
R14	Resistor	16K Ohm, ±½% Carbofilm ½W	T-15-1549
R15	Resistor	3.16 Ohm Wirewound	T-15-1559
R16	Resistor	5K Ohm, ±½% Carbofilm ½W	T-15-1550
R17	Resistor	40 Ohm, Wirewound	T-15-1562
R18	Resistor	4.0 Ohm, Wirewound	T-15-1560
R19	Resistor	45K Ohm, ±½% Carbofilm ½W	T-15-1551
R20	Resistor	240K Ohm, ±½% Carbofilm ½W	T-15-1552
R21	Resistor	1.2 Megohm, ±½% Carbofilm ½W	T-15-1553
R22	Resistor	4.5 Megohm, ±½% Carbofilm ½W	T-15-1554
R23	Resistor	24 Megohm, ± 1% Carbofilm 2W	T-15 -1226
R24	Resistor	72 Megohm, ± 1% Carbofilm 2W	T-15-1227
R25	Shunt	12 Amp 250 Mv Strip Type	T-90-212
X	Rectifier Assem.	Copper Oxide, Conant BHS-160, 3 Lead	T-2250-13
	Case	Bakelite, with strap handle	T-10-784
	Knob	2 15/32" long, molded (with clip)	T-34-30
	Leads	Banana Plug type with Alligator clips	T-79-49
	Switch	20 Pos. 3 deck, without resistors	T-22-103

INTERIOR VIEW

DATA

DB CHART

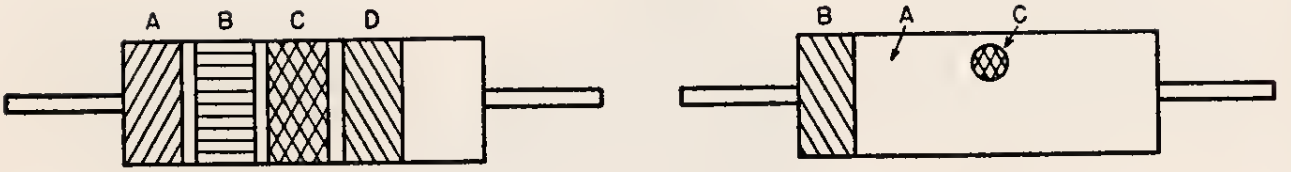
Decibels with 0 DB at 6 Mw in 500 ohm line	Line Power Mw	RMS Volts with line Imped. of 500 ohms
—70	.0000006	.000548
—60	.000006	.00173
—50	.00006	.00548
—40	.0006	.0173
—30	.006	.0548
—20	.06	.173
—10	.6	.548
—5	1.897	.974
0	6.00	1.73
+10	60.0	5.48
+15	189.7	9.74
+20	600	17.3
+30	6,000	54.8
+40	60,000	173.2
+50	600,000	548
+60	6,000,000	1732
+70	60,000,000	5480

Note:

The range of audibility can be considered to lie from 70 db below the normal speech level to 70 db above the same level, or a total range of 140 db.

D A T A

RMA RESISTOR COLOR CODE



Color	Indicates
A	First number
B	Second number
C	Number of zeros
D	Tolerance

Color	Number	Color	Number	
Black	0	Violet	7	
Brown	1	Gray	8	
Red	2	White	9	
Orange	3	Gold	5%	tolerance
Yellow	4	Silver	10%	tolerance
Green	5	None	20%	tolerance
Blue	6			

The resulting value is in ohms.

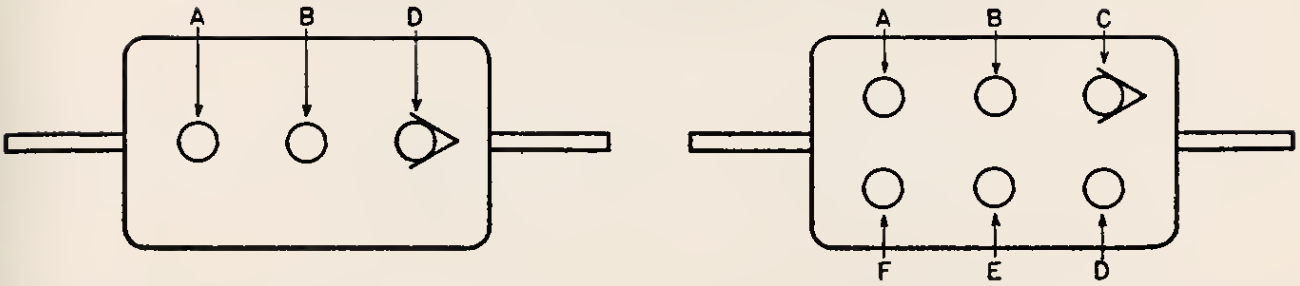
Example:

A 250,000 ohm 20% resistor.

A red
B green
C yellow
D no color

D A T A

RMA MICA CONDENSER COLOR CODE



Color	Indicates
A	First number
B	Second number
C	Third number
D	Number of zeros
E	Tolerance
F	Voltage rating

Color	Number	Tolerance	Voltage Rating
Black	0	—	—
Brown	1	1%	100
Red	8	2%	200
Orange	3	3%	300
Yellow	4	4%	400
Green	5	5%	500
Blue	6	6%	600
Violet	7	7%	700
Gray	8	8%	800
White	9	9%	900
Gold	–	5%	1000
Silver	–	10%	2000
None	–	20%	500

Resulting value is in micro-micro-farads.

Example:

A 100 mmf condenser, 10% tolerance, 500 volt rating

Type 1

A Brown
B Black
B Brown

Type 2

A Brown
B Black
C Black
D No color
E Silver
F No color

RMA TRANSFORMER COLOR CODE

I. F. Transformers:

Blue—plate lead
Red—"B" + lead
Green—grid (or diode) lead
Black—grid (or diode) return

NOTE: If the secondary of the i. f. t. is center-tapped, the second diode plate lead is green-and-black striped, and black is used for the center-tap lead.

Power Transformers:

1. Primary Leads.....Black
   If tapped:
   Common .....Black
   Tap—Black and Yellow Striped
   Finish—Black and Red Striped
2. High-Voltage Plate Winding .....Red
   Center-Tap — Red and Yellow Striped
3. Rectifier Fil. Winding... Yellow
   Center-Tap—Yellow and Blue Striped
4. Fil. Winding No. 1. Green
   Center-Tap — Green and Yellow Striped
5. Fil. Winding No. 2. Brown
   Center-Tap — Brown and Yellow Striped
6. Fil. Winding No. 3. . Slate
   Center-Tap — Slate and Yellow Striped

A. F. Transformers:

Blue—plate (finish) lead of primary

Red—"B"+ lead (this applies whether the primary is plain or center-tapped).

Brown—plate (start) lead on center tapped primaries. (Blue may be used for this lead if polarity is not important.)

Green—grid (finish) lead to secondary

Black—grid return (this applies whether the secondary is plain or center-tapped.)

Yellow—grid (start) lead on center tapped secondaries. (Green may be used for this lead if polarity is not important.)

Note: These markings apply also to line-to-grid, and tube-to-line transformers.

RMA SPEAKER COLOR CODE

Voice—Coil:

Green—finish
Black—start

Field Coils:

Black and red—start
Yellow and red—finish
Slate and Red—tap (if any)

RMA WIRING COLOR CODE

B+	Red
Ground	Black
Plate	Blue
Grid	Green
Cathode	Yellow
High Heater	Brown
Low Heater	Black
Screen Grid	Orange
AVC	White

DATA

COPPER WIRE TABLE

Gauge No. B. & S	Diam. in Mils*	Circular Mil Area	Turns per Linear Inch		Ampere Current Carrying Capacity †	
			Enamel	D. C. C.	Rubber Insulation	Other Insulation
1	289.3	83690	———	———	100	150
2	257.6	66370	———	———	90	125
3	229.4	52640	———	———		
4	204.3	41740	———	———	70	90
5	181.9	33100	———	———		
6	162.0	26250	———	———	50	70
7	144.3	20820	———	———		
8	128.5	16510	7.6	7.1	35	50
9	114.4	13090	8.6	7.8		
10	101.9	10380	9.6	8.9	25	30
11	90.74	8234	10.7	9.8		
12	80.81	6530	12.0	10.9	20	25
13	71.96	5178	13.5	12.0		
14	64.08	4107	15.0	13.8	15	20
15	57.07	3257	16.8	14.7		
16	50.82	2583	18.9	16.4	6	10
17	45.26	2048	21.2	18.1		
18	40.30	1624	23.6	19.8	3	6
19	35.89	1288	26.4	21.8		
20	31.96	1022	29.4	23.8		
21	28.46	810.1	33.1	26.0		
22	25.35	642.4	37.0	30.0		
23	22.57	509.5	41.3	31.6		
24	20.10	404.0	46.3	35.6		
25	17.90	320.4	51.7	38.6		
26	15.94	254.1	58.0	41.8		
27	14.20	201.5	64.9	45.0		
28	12.64	159.8	72.7	48.5		
29	11.26	126.7	81.6	51.8		
30	10.03	100.5	90.5	55.5		
31	8.928	79.70	101	59.2		
32	7.950	63.21	113	62.6		
33	7.080	50.13	127	66.3		
34	6.305	39.75	143	70.0		
35	5.615	31.52	158	73.5		
36	5.000	25.00	175	77.0		
37	4.453	19.83	198	80.3		
38	3.965	15.72	224	83.6		
39	3.531	12.47	248	86.6		
40	3.145	9.88	282	89.7		

*A mil is 1/1000 of an inch.
†Maximum currents for ordinary electrical wiring.

RMA STANDARD WARRANTY

Approved October 15, 1947

1. We warrant all products manufactured or sold by us to be free from defects in material and workmanship. This warranty is limited to repairing or replacing any of said products which prove to be defective upon our inspection, and whch are within the warranty period of twelve months from the date of our delivery.

2. Products claimed to be defective may be returned to us after written permission is given by us. When material is returned, it must be properly packed and shipped with transportation prepaid. If upon inspection the equipment is found defective, credit will be given to offset the prepaid transportaton.

3. This warranty does not extend to any products which have been subjected to abuse, accident, improper installation or application, alteration or negligence in use, storage, transportation or handling.

4. The failure to return the merchandise within the period specified in Paragraph One shall constitute a final acceptance of the merchandise and conclusively operate as a fulfillment of all warranties, expressed or implied.

5. This warranty excludes all oral or other and implied warranties, and the manufacturer shall in no event be liable for damages for a breach of warranty in an amount exceeding the purchase price of the alleged defective equipment.

RMA STANDARD WARRANTY FOR MAINTAINING PARTS OF DISCONTINUED MODELS

The Triplett Electrical Instrument Company warrants this equipment under the standard warranty of the instrument section of the RMA Parts Division. Parts will be made available for a minimum period of five (5) years after the manufacture of this equipment has been discontinued.

Parts include all materials, charts, instructions, diagrams, accessories, etc., which have been furnished in the Standard Model.

RED-DOT LIFETIME GUARANTEE

The Red-Dot Lifetime Guarantee made only by Triplett warrants the meter to be free from defects in material and workmanship for the life of its original user.

The Triplett Electrical Instrument Company
Bluffton, Ohio

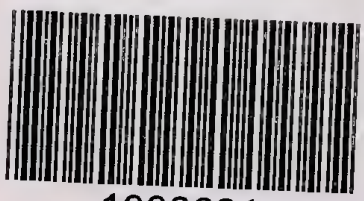
NOTES

Printed in U. S. A.

Part No. T-84-2-71750

Precision first

. . . to last



THE TRIPLETT ELECTRICAL INSTRUMENT CO.
BLUFFTON, OHIO